

## ABSTRACT

A medical prosthetic device or medical implant containing a metal material (A) selected from the group consisting of titanium or an alloy thereof, zirconium or an alloy thereof, tantalum or an alloy thereof, hafnium or an alloy thereof, niobium or an alloy thereof and a chromium-vanadium alloy, wherein surface parts of the metal material (A) are coated with a layer of a corresponding hydride material (B) selected from titanium hydride, zirconium hydride, tantalum hydride, hafnium hydride, niobium hydride and chromium and/or vanadium hydride, respectively, said device or implant being characterised in that the layer of hydride material (B) comprises one or more biomolecule substances (C) associated therewith. The device or implant exhibits improved biocompatibility. The metal material (A) is preferably titanium.

The biomolecule substance (C) may be selected from the following types of substances: Natural or recombinant bio-adhesives; natural or recombinant cell attachment factors; natural, recombinant or synthetic biopolymers; natural or recombinant blood proteins; natural or recombinant enzymes; natural or recombinant extracellular matrix proteins; natural or synthetic extracellular matrix biomolecules; natural or recombinant growth factors and hormones; natural, recombinant or synthetic peptide hormones; natural, recombinant or synthetic deoxyribonucleic acids; natural, recombinant or synthetic ribonucleic acids; natural or recombinant receptors; enzyme inhibitors; drugs; biologically active anions and cations; vitamins; adenosine monophosphate (AMP), adenosine diphosphate (ADP) or adenosine triphosphate (ATP); marker biomolecules; amino acids; fatty acids; nucleotides (RNA and DNA bases); and sugars.